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SUSQUEHANNA RIVER BASIN COMMISSION
5012 LENKER STREET
MECHANICSBURG, PENNSYLVANIA 17055

STATUS OF FLOOD DAMAGE REDUCTION PROGRAMS
AND

PROJECTS SINCE AGNES

A STAFF OVERVIEW

OCTOBER 9, 1975

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 By Agnes
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INTRODUCTION

The Eloise flood event of September 23-27, 1975, emphasized the need to review and report the progress since Agnes of projects and programs for reducing future flood damages in the Susquehanna Basin.

To facilitate review and provide a ready reference source, existing structural flood control measures are listed in Appendix A. Appendix B is a summary listing and status of ongoing studies and projects of Federal, State and regional governments as they relate to flood damage reduction measures. A table showing the number of the existing, under construction, and planned structural measures is included with this Appendix. Flood plain delineation studies completed, underway and planned are shown in Appendix C.

It is obvious from these appendices that much has been accomplished and is underway since the Agnes event in 1972. The Eloise event, however, makes it equally clear that very much more remains to be done.

PROJECT STATUS - STRUCTURAL MEASURES

Two major projects that have moved toward completion since 1972 are the Corps of Engineers Tioga-Hammond and Cowanesque Reservoir projects which will provide a very high level of protection along the Tioga and Chemung Rivers. Additionally, these two large reservoirs will have the potential to effect significant reductions of river stage as far down stream as Sunbury on the main Susquehanna River.

Local flood protection works in the Chemung Basin and throughout the Wyoming Valley have been repaired since Agnes and restored to their original design elevations. Other existing flood control reservoirs and local flood protection works have been repaired as needed.

The Raystown Reservoir project on the Raystown Branch, Juniata River has been completed since Agnes and adds significant control of the Juniata River that could be effective, to some extent, in lowering flood stages of the Susquehanna River downstream from its confluence with the Juniata.

Many important flood protection project studies have been initiated since the Agnes event. Three of these studies conducted by the Corps in the Wyoming Valley, Harrisburg, and Lock Haven have proposed projects which have been before the Commission and recommended for Phase I design memorandum stage of advance engineering and design.

The status of these three proposed projects is as follows:

(1) Wyoming Valley

The proposal was received by the Board of Rivers and Harbors in July 1973 and transmitted to the Office, Chief of Engineers in August 1973.

Review of the proposed project by all Federal and State agencies was completed by October 1974, and the final EIS has been prepared. The project proposal was sent to the Secretary of the Army in September 1975.

It is expected the proposal will go to the Federal Office of Management and Budget after review by the Secretary's Office. If these reviews are favorable, the project could possibly be moved forward for inclusion in the upcoming Omnibus Bill to be considered by Congress in the spring.

With favorable congressional action the project under two-phase approval would be authorized for advance engineering and design. Such work might take 2-3 years, thus Phase II (funding) authorization could not be expected until FY-1980.

(2) Harrisburg

This project involves measures to control interior flooding of Harrisburg by overflows from Paxton Creek and protection from flooding by the Susquehanna River.

The proposed project has proceeded through various levels of review with changes requiring reconsideration of the design features which have resulted in greatly increased project costs. The project currently has an unfavorable benefit-cost ratio. It reportedly is in the Baltimore District Engineer's Office for re-study.

(3) Lock Haven

This proposed levee/wall project was received by the Board of Rivers and Harbors in November 1974. It went on to the Office, Chief of Engineers in January 1975.

Federal and State reviews were completed by July 1975. A final EIS is being prepared by the Baltimore District and is due in the Chief's Office, October 14, 1975.

Presumably the proposed project will be moved on to the Secretary of the Army and on to OMB early this winter. Whether or not it will move through these reviews in time to be included in the upcoming Omnibus Bill cannot be determined.

Other Corps studies for projects in the basin are less advanced. Reportedly the Milton Study shows an unfavorable benefit/cost ratio. The Bull Run Study, Lycoming County, Pennsylvania, has advanced from reconnaissance cost estimates of \$460,000 to study estimates of over \$4.0 million. Work is continuing on this study in an effort to develop a feasible project. The Corps has several other reconnaissance studies underway regarding small stream flooding problems. Specific areas being studied are Brookside in the Wyoming Valley, and Middletown and Spring Creek in the Harrisburg area.

At Marathon, New York, the Corps is studying the feasibility

of a local flood protection project that essentially involves major channel improvements that will benefit this small community. The study is scheduled to be completed in December 1975. The proposal would then be subject to consideration by higher Corps authorities, other Federal agencies, State agencies, the Secretary of the Army, OMB and Congress. If it is determined that a feasible project can be developed at this site, construction would presumably be after 1980.

Reconnaissance studies have been completed by the Corps or are underway for projects in Hornell, Endicott, Johnson City, Vestal, Big Creek and Painted Post, New York. Most of these studies deal with improvements to existing local protection projects.

Thus, it appears one and possibly two major new flood protection projects sponsored by the Corps will be ready for consideration by Congress for advanced engineering authorization next spring. Optimistically, the earliest funding of these two projects for construction, should they carry through advanced design, would be in 1980. The other Corps studies underway are less advanced, and projects determined feasible would not be ready for construction until some later date. Exceptions could occur, especially on smaller projects which might be moved under other Corps programs.

U.S. SCS AND STATE PROJECTS

Many small watershed projects of SCS in New York and Pennsylvania have moved to completion since Agnes or are under construction and will provide localized but effective flood storage and protection along the involved waterways.

Eight and possibly more SCS P.L. 566 Small Watershed projects in the basin are approved for planning and could move on to more advanced stages if local sponsors are obtained to assume certain project costs. (Appendix B)

Similarly several State projects, mainly levees and channel improvements, have been completed or are under construction. Examples in Pennsylvania are channel improvements at Blakely in the Wyoming Valley, levees and pumping stations at Huntingdon-Smithfield along the Juniata River and improved drainage behind existing levees at Everett. (Appendix B)

New York DEC has one local protection project at Gangs Mills under final design. In Pennsylvania, DER has approximately ten local levee, wall and/or channel improvement projects under design and 26 projects in the planning stage.

In terms of structural projects, much has been done and much more is underway by the Federal and State agencies to control flood waters and reduce damages from future floods.

The frequency of flooding and the extreme damages sustained during floods in the basin clearly indicate that the need remains high for additional protection measures for well-developed areas having a flood hazard.

BASINWIDE FLOOD CONTROL REVIEW STUDY

To this end a Flood Control Review Study is underway by the Baltimore District of the Corps. This Study involves a wide array of investigations including structural considerations for increased reservoir storage, local protection works and channel improvements. The many studies noted earlier will be reviewed and included as applicable in the overall effort. Updating of flood damage curves, study of floodproofing methods, cost and applicability, and relocation consideration are also included. This basinwide study is scheduled for completion in 1977.

PROGRAM STATUS - NONSTRUCTURAL MEASURES

In the very broad area of nonstructural flood damage reduction measures, key programs are those to improve and expand the flood warning and forecasting system for major streams and also for small watersheds, to regulate land uses in areas having a high flood hazard and to extend flood insurance coverage to flood prone areas.

(1) Flood Forecasting

In recent meetings the Commission has discussed many ways in which the flood forecasting system can be improved. Since Agnes many new stream gages have been installed, automated recording and reporting equipment has been obtained, a new system of data collection and processing has been planned and implementation of the plan is proceeding as new equipment becomes available.

Overall the flood forecasting program is receiving continuing attention, upgrading and expansion. There remain areas where forecasting difficulties still occur. Some of the causes are lack of equipment, breakdowns, loss of communications and staff constraints in terms of observers and technical personnel.

(2) Land Use Control - Flood Prone Areas

The effort to reduce future flood damages through improved management of flood prone areas is moving on several fronts. Importantly, some local government bodies are enacting and implementing ordinances to control unsuitable kinds of development in flood hazard zones.

In New York State, legislation has been enacted authorizing the State to take action in cooperation with local governments to work toward the regulation of land uses in flood prone areas.

Similar legislation is near final passage by the Pennsylvania General Assembly.

The Federal government, through its disaster renewal and flood insurance programs, is also helping in the effort to assure uses of land in flood hazard areas are compatible with flood risks involved.

The importance of these efforts to put into practice effective management of flood prone lands cannot be overemphasized and cannot, in good conscience, be delayed. There are 1,185 communities in the basin that are flood prone and only a small number of them can expect to be protected by structural flood control measures. The others face repeated flooding, repeated property losses and steadily declining values in their area. Few families, businesses or industrial operations can withstand repeated flooding without suffering severe personal, social and economic losses. Society in general cannot withstand these repeated losses that drain away human and economic resources we can ill afford to waste.

OVERVIEW

The Eloise event demonstrated our continuing vulnerability to flooding whether we live in the country, the small town or the city/urban area. The difficulties in justifying structural flood control measures, the high costs of such projects and the environmental conflicts they stir are in better focus now than after Agnes.

Two nonstructural alternatives to dams, levees, and flood walls are relocation of people and industry away from flood prone areas, and the careful control of land uses in these hazard zones. These measures are largely untested in this area, and may incur high costs and economic hardships for some; they certainly can be expected to create political and social conflicts.

In essence, there are no easy or cheap ways to reduce the personal and economic losses from future floods. We know that the potential for major flood events in this basin is quite high, as is our vulnerability to them. There is or should be growing concern that our rate of progress in reducing flood damages is lagging relative to the frequency of flood occurrences. However, a start has been made to cut our future losses. This is clearly evidenced in the many programs described earlier in this review. Granted there are difficult areas in each plan to reduce flood problems; however, once identified we can divert some of our efforts to resolving the most critical matters.

In the efforts to plan, design and implement programs and projects, problems have surfaced that remain to be resolved to achieve an acceptable level of flood protection and damage reduction.

(1) Structural Concerns

In terms of structural measures three major difficulties have become obvious.

We do not now have available a basinwide plan for a balanced program of structural and nonstructural measures to reduce significantly flood damages along our major waterways.

Efforts of the past were directed toward the planning of systems of flood control and management measures. Unfortunately, few of these plans were fully implemented. Since Agnes the planning efforts seem more directed toward single purpose projects to protect individual damage centers. This approach appears fully justifiable for SCS and State level projects due to statutory and funding limitations. However, except in cases such as Harrisburg or in similar areas where other structural protection alternatives are minimal, it seems more appropriate that the Corps' basic planning program addresses consideration of control measures that have the broadest application for the main river and its major tributaries. No other agency has the potential to handle a program of this magnitude.

A second problem that has become increasingly apparent is the seeming difficulty in justifying flood control projects in this basin.

It has been suggested that the benefit/cost formulas set forth by Congress for evaluating the financial feasibility of Federal projects should be revised to consider cumulative damages. Con-

versely, it might be that the difficulty lies in the planning and design of flood control projects in this area or in the interpretation and application of benefits.

Congress annually authorizes several hundred million dollars for flood control projects in the nation. From this we can conclude that the benefit/cost formulas work elsewhere. The question is - why not here? The damages for Agnes set a record cost level for a single national disaster. This region of the U.S. is heavily populated and highly industrialized compared to most states. Flooding has been frequent and damages have been high, thus carefully planned flood control projects should be readily justifiable. Obviously, there are no easy answers to this area of concern but it is one that should receive priority for detailed consideration.

A third problem is in the seeming lack of unity among the affected communities striving to obtain flood protection and management programs. Everyone seems to be going his own way without much heed for others. Obviously, those who have suffered damages want protection. Others, not damaged, frequently either do not support proposed structural programs, possibly for lack of direct interest, or they actively oppose virtually any structural project. Often a few can effectively delay badly needed projects. The spectre of land condemnation and the possible loss of valuable farm land,

industrial sites, residential areas and recreational possibilities present real problems requiring careful and deliberate thought. Sometimes these concerns do and should override project plans; however, the lack of unity within communities and among communities suffering common flood problems forms a significant barrier to obtaining needed relief from serious flooding.

(2) Nonstructural Concerns

Three problem areas we still face in terms of nonstructural flood damage reduction measures can be readily identified.

a. Flood Forecasting

The first concerns the vitally important flood forecasting service. The weaknesses identified to date in this service appear related directly to budgetary constraints. The section of the National Weather Service that deals directly with flood forecasting and warning programs received, on a nationwide basis, approximately \$6.4 million in FY-1975. This amounts to about 5% of the funds available in the overall \$124.2 million NWS budget.

The benefits from timely and accurate forecasts are very considerable in terms of human safety and the pro-

tection of property. Seemingly a larger share of the NWS budget could be devoted to the important functions of forecasting floods.

b. Land Use Controls in Flood Prone Areas

The heavy damages sustained in recent flood events in this basin and others provide clear evidence of the need for effective control of the uses of flood prone lands. The many limitations to providing structural protection for most flood prone communities emphasize the necessity to implement, on a broad scale, programs to manage flood hazard areas in terms of uses compatible with the flood risks. Local governments have the authority to regulate land uses in flood hazard areas. Similar authority has been granted to New York State, and Pennsylvania is close to obtaining this authority. Increased emphasis and use must be made of this approach to reducing future flood damages.

c. Coordination

The term coordination is overworked in the written word and underpracticed by almost everyone. This is not to say there is no coordination among the many levels of government and the many agencies with parallel and

often overlapping jurisdictions. There are many and continuing instances of effective and highly commendable coordination efforts among Federal, State and local governments. However, the lack of this ingredient, coordination, frequently lies at the bottom of seemingly unresolvable problems.

To achieve even modest success in the overall flood damage reduction program, there is need for increased coordination among all levels of government that results in an open and timely exchange of data and ideas, a willingness to fairly examine and provide constructive criticism of programs and projects of others and to recognize and honor areas of primary jurisdiction be they local, State or Federal or among agencies of a government entity.

SUMMATION

In a final summation we can report that a number of major and minor flood damage reduction projects, structural and nonstructural, are either underway or in some stage of study, planning or design.

Existing flood protection facilities have been repaired and restored since Agnes to their full design capacities. Other existing levees, walls and drainage systems are under review for improve-

ments. Some systems (flood forecasting) are being updated, improved and expanded. Three structural projects have been proposed for installation at major damage centers. Two appear well along toward authorization; the third is in difficulty at this time.

Flood plain delineation efforts in this basin are well ahead of similar programs throughout the nation. Flood prone land use management programs are being implemented to some extent with much more emphasis expected in this area in New York and by the Federal government. Passage of legislation in Pennsylvania authorizing State level efforts in this program is expected soon.

It is fair to state much is being done to reduce damages from future floods. In fact, without the recent reminder of Eloise it might be considered the program is moving well. However, Eloise dispelled any thought that basin residents can be complacent regarding progress toward planning, designing and effectuating acceptable flood damage reduction projects and programs.

APPENDIX A

COMPLETED FLOOD CONTROL PROJECTS

U.S. ARMY CORPS OF ENGINEERS

<u>1. Reservoirs</u>	<u>Drainage Area (Sq. Mi.)</u>
Almond Lake - Flood Control, Recreation	56
Alvin R. Bush Dam - Flood Control, Recreation	226
Arkport Dam - Flood Control	31
Aylesworth Creek Lake - Flood Control, Recreation	6.2
Curwensville Lake - Flood Control, Recreation	365
East Sidney Lake - Flood Control, Recreation	102
Foster Joseph Sayers Dam - Flood Control, Recreation	339
Indian Rock Dam - Flood Control	94
Raystown Lake - Flood Control, Recreation	960
Stillwater Lake - Flood Control, Water Supply	36.8
Whitney Point Lake - Flood Control, Recreation and Wildlife Management	225

2. Local Flood Protection Projects

Addison - Levee and Wall
Addison - Emergency Bank Protection
Avoca - Levee, Channel Improvement
Bainbridge - Channel Improvement
Bath - Levee and Wall
Binghamton - Levee and Channel Improvement
Binghamton - Channel Improvement
Canisteo - Levee and Channel Improvement
Cincinnatus - Channel Improvement
Conklin-Kirkwood - Channel Improvement
Corning - Levee, Wall, Channel Improvement
Corning (Monkey Run) - Channel Improvement
Cortland - Channel Improvement
Elkland - Levee, Channel Improvement
Elmira - Levee, Wall, Channel Improvement
Endicott, Johnson City, Vestal - Levee,
Wall, Channel Improvement
Greene - Levee, Wall, Channel Improvement
Hornell - Levee, Wall, Channel Improvement
Kingston-Edwardsville - Levee, Wall, Channel
Improvement
Lisle - Levee, Wall, Channel Improvement
Milton - Channel Improvement
Nichols - Levee
Norwich - Channel Improvement
Oneonta - Channel Improvement
Owego - Channel Improvement
Oxford - Levee, Channel Improvement
Painted Post - Levee, Wall, Channel
Improvement
Plymouth - Levee, Channel Improvement
Port Dickinson - Channel Improvement
Scranton - Levee, Wall
Sherburne - Channel Improvement
Sunbury - Levee, Wall
Swoyersville-Forty Fort - Levee, Wall,
Channel Improvement
Tyrone - Levee, Wall, Channel Improvement
Unadilla - Levee, Channel Improvement
Whitney Point - Levee, Channel Improvement
Wilkes-Barre-Hanover Township - Levee, Wall.
Williamsport - Levee, Wall, Channel
Improvement
York - Levee, Channel Improvement

SOIL CONSERVATION SERVICE

1. P.L. 566 Projects

New York

a) Dean Brook Project, Tioga and Chemung Counties

Completed in FY-1961. Area - 6,320 acres. Project includes two single-purpose flood prevention dams, channel improvement, debris basins and a land treatment program. Benefits to flood and sediment damage reduction.

b) Great Brook Project, Chenango County

Area 16,768 acres. Project includes one single-purpose flood prevention dam, channel improvement, debris basins, road bank stabilization and a land treatment program. Benefits to flood and sediment damage reduction.

c) Upper Fivemile Creek Project, Steuben and Yates Counties

Area 38,100 acres. Project includes dike and levee, stream improvement, debris basin, pumping plant and a land treatment program. Benefits to flood and sediment damage reduction.

d) Genegantslet Creek Project, Chenango County

Area 66,457 acres. Project includes one multipurpose dam, trout stream improvement, one single-purpose wildlife structure and a land treatment

program. Benefits to flood and sediment damage reduction, and fish and wildlife.

Pennsylvania

a) Marsh Creek Project, Tioga County

Completed in FY-1972. Area 52,940 acres. Project includes one single-purpose flood water retarding structure, two multipurpose structures, one basic recreation facility, and a land treatment program. Benefits to flood damage reduction, recreation, water supply, fish and wildlife, and sediment damage reduction.

b) Martin Creek Project, Susquehanna County

Completed in FY-1970. Area 31,680 acres. Project includes two flood water retarding structures, one flood water diversion, and a land treatment program. Benefits to flood damage reduction.

c) Mill Creek Project, Tioga County

Completed in FY-1968. Area 8,430 acres. Project includes two flood water retarding structures, one multipurpose structure, and a land treatment program. Benefits to flood damage reduction and fish and wildlife.

d) North Fork of Cowanesque River Project, Potter County

Completed in FY-1967. Area 7,650 acres. Project includes one flood water retarding structure and

a land treatment program. Benefits to flood damage reduction and sediment damage reduction.

Maryland

a) Little Deer Creek Project, Harford County

Completed in FY-1970. Area 10,112 acres. Project includes 4 single-purpose flood prevention dams and a land treatment program. Benefits to flood and sediment damage reduction.

2. Soil Surveys

New York

Allegany
Broome
Chemung
Cortland
Tioga
Tompkins

Pennsylvania

Adams
Berks
Clinton
Columbia
Chester and Delaware
Fulton
Indiana
Jefferson
Lancaster
Potter
Susquehanna
York

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES

<u>1. Reservoirs</u>	<u>Drainage Area (Sq. Mi.)</u>
Frances Slocum Dam - Flood Control	6.1
Glendale Dam - Flood Control, Recreation	42.0
George B. Stevenson Dam - Flood Control, Recreation	243.0
Little Pine Creek Dam - Flood Control, Recreation	165.4
Middle Creek Dam - Flood Control, Recreation	17.6
Shawnee Dam - Flood Control, Recreation	37.5

2. Local Flood Protection Projects

Athens (Susquehanna River) - Levee
 Athens (Chemung River) - Levee
 Barnesboro - Levee, Channel Improvement
 Cherry Tree - Levee, Channel Improvement
 Danville - Levee
 Danville (Mahoning Creek) - Levee, Channel
 Improvement
 Danville (Sechler Run)
 Dickson City - Channel Improvement
 Duryea - Channel Improvement
 Emporium - Debris Dam, Channel Improvement
 Everett - Levee
 Galeton - Levee, Channel Improvement
 Huntingdon-Smithfield - Levees
 Huntingdon-Smithfield - Channel Improvement,
 Conduit, Debris Dam
 Irvona - Levee
 Mayfield - Channel Improvement
 Milesburg - Channel Improvement
 Milton - Stabilization
 Mocanaqua - Channel Improvement
 Moosic - Levees and Channel Improvement

Local Flood Protection Projects (Continued)

Olyphant - Channel Improvement
Patton - Channel Improvement
Philipsburg - Channel Improvement
Plymouth - Debris Dams and Culverts
Sayre - Levee and Channel Improvements
Sayre - Internal Drainage and Pumping Stations
Scranton - Channel Improvements and Culvert
Tioga - Levee and Channel Improvements
Wyoming - Channel Improvements

APPENDIX B

CURRENT FLOOD PROTECTION PROJECTS AND STUDIES
BY AGENCIESCORPS OF ENGINEERS

PROJECT OR STUDY	TYPE OF PROJECT	STAGE	REMARKS
Tioga-Hammond	Reservoirs	Construction	Completion Date-1978
Cowanesque	Reservoir	Construction	Completion Date-1980
Wyoming Valley	Levee, Flood-wall	Survey Study Completed	Before Chief of Engineers for review
Harrisburg	Levee and Flood-wall, Channel Improvements	Survey Study	
Lock Haven	Levee and Flood-wall	Survey Study	Before Chief of Engineers for review
Flood Control Review Study	Basinwide Structural and Non-structural System	Study	Completion Date FY-1977
Milton	Not Yet Determined	Survey Study	
Marathon	Channel Improvement	Final Stage of Survey Study	Completion of Study December-1975
Bull Run	Levee and Pumping Station	Detailed Project Study Underway	Completion of Study May 1976
Painted Post	Levee	Reconnaissance Report Completed	Report recommends raising of existing levee project

CORPS OF ENGINEERS - (Continued)

PROJECT OR STUDY	TYPE OF PROJECT	STAGE	REMARKS
Brookside	Levee	Reconnais- sance Report Completed	
Spring Creek		Reconnais- sance Report Underway	
Middletown		Reconnais- sance Report to begin, Summer 1975	
Big Creek		Reconnais- sance Report to begin Fall 1975	
Endicott, Johnson City, Vestal	Levee, Flood- wall	Review of existing pro- ject underway	
Hornell	Levee, Flood- wall	Review of existing pro- ject planned	

USDA
SOIL CONSERVATION SERVICE

Little Choconut, Finch Hollow Trout Brook	Floodwater re- tarding struc- tures, debris control, land treatment	Construction Completed	
Marsh Ditch	Floodwater re- tarding struc- ture, channel improvement, land treatment	Construction Completed	

SOIL CONSERVATION SERVICE - (Continued)

PROJECT OR STUDY	TYPE OF PROJECT	STAGE	REMARKS
Nanticoke Creek	Floodwater re- tarding struc- tures, land treatment	Construction	Completion Date FY-1980
Newtown-Hoffman Creek	Single and multi- purpose flood water retarding structures, pump- ing plant and land treatment	Construction	Completion Date FY-1978
Patterson, Brixius, Grey Creeks	Flood water re- tarding struc- tures, land treatment	Construction Completed	
Mill Brook		Planning	
Briar Creek	Single and multi- purpose retarding structures, land treatment	Construction	Completion Date FY-1978
Middle Creek	Multipurpose struc- tures, land treat- ment, channel improvement	Construction	Completion Date FY-1978
Nescopeck Creek	Multipurpose re- tarding structure, land treatment	Construction	Completion Date FY-1978
Upper Tioga River	Non-structural measures	Planning	
Chickies Creek		Application Approved	Approved 1970
Cowanesque River Tributary		Application Approved	Approved 1955
Kishacoquillas Creek		Application Approved	Approved 1973

SOIL CONSERVATION SERVICE - (Continued)

PROJECT OR STUDY	TYPE OF PROJECT	STAGE	REMARKS
Quittapahilla Creek		Application Approved	Approved 1973
Wiconisco Creek		Application Approved	Approved 1973
Bentley Creek		Application Approved	Approved 1965

NEW YORK - DEC

Gang Mills	Levees, interior drainage measures	Final Design	
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PENNSYLVANIA - DER

Blakely	Channel Improve- ment	Construction	Hull Creek; Completion Date August-1975
Huntingdon- Smithfield	Levees and pump- ing Station	Construction	Juniata River; Com- pletion Date December 1975
Everett	Improve interior drainage behind existing levees	Construction	Raystown Branch Juniata River; Com- pletion Date Summer-1975
Wyoming and West Wyoming	Channel Improve- ment	Design	Abrahams Creek

PENNSYLVANIA - DER (Continued)

<u>PROJECT OR STUDY</u>	<u>TYPE OF PROJECT</u>	<u>STAGE</u>	<u>REMARKS</u>
Swoyersville and Forty-Fort	Channel Improve- ment, minor levee	Design	South Branch Abrahams Creek and Wade Run
Danville	Channel Improve- ment, levee and wall	Design	Sechler Run
Danville	Levee, raising of existing levee	Design	Susquehanna River
Coalport	Channel Improve- ment, levee	Design	Clearfield Creek
Duryea	Levee	Design	Lackawanna River
Luzerne	Retaining wall	Design	Toby Creek
Lawrenceville	Rip-rap existing levee	Design	Tioga River
Wilkes-Barre	Channel Improve- ment	Design	Spring Run
Williamsburg	Channel Clearing	Planning	Frankstown Branch Juniata River
Athens	Raise, Rehabil- itate existing levee	Planning	Chemung River
Castenea	Rehabilitate existing wall, channel improve- ment	Planning	Harvey's Run
Catawissa	Levee	Planning	Catawissa Creek and Susque- hanna River

PENNSYLVANIA - DER (Continued)

PROJECT OR STUDY	TYPE OF PROJECT	STAGE	REMARKS
Mount Holly Springs		Planning Recently Initiated	Mountain Creek
Highspire	Channel Improvement	Planning	Bird Run
Moosic	Levee	Planning	Spring Brook
Old Forge	Channel Improvement	Planning	St. Johns Creek
Dickson City	Channel Improvement	Planning	Scott Creek
Luzerne	Channel Improvement, wall	Planning	Toby Creek
Ashley	Channel Improvement	Planning	Solomon Creek
Jessup	Channel Improvement	Planning	Sterry Creek
Newport Township and Nanticoke City	Channel Improvement, siltation prevention measures	Planning	South Branch Newport Creek
Reedsville		No specific measures identified	Honey Creek
Upper Augusta	Levee	Planning	Little Shamokin Creek
York	Channel Improvement	Planning	Tyler Run
Everett	Siltation prevention measures	Planning	Bloody Run

PENNSYLVANIA - DER (Continued)

<u>PROJECT OR STUDY</u>	<u>TYPE OF PROJECT</u>	<u>STAGE</u>	<u>REMARKS</u>
Hollidaysburg	Channel Improvement	Planning	Beaver Dam Branch of Franks-town Branch Juniata River
Emporium	Channel Improvement, raise existing levee	Planning	Driftwood Branch Sinnemahoning Creek
Woolrich	Channel Improvement	Planning	Chatham Run
Taylor		Planning Recently Initiated	Keyser Creek
Wilkes-Barre and Hanover Township	Channel Improvement, other measures	Planning	Solomon Creek (Goose Island Area)
Jersey Shore	Channel Improvement	Planning	Lawshe Run and Pfouts Run
Swatara	Retention	Planning	Spring Creek, working with SCS
Altoona	Channel Improvement	Planning	Spring Run
Exeter Borough	Channel Improvement	Planning	Hicks Run
Hop Bottom	Channel Improvement, slope stabilization	Planning	Unnamed tributary to Martins Creek

SUMMARY

STRUCTURAL FLOOD CONTROL MEASURES

S U B - B A S I N S

	1	2	3	4	5	6	7	8	Total
<u>Dams</u>									
Existing	5	9	5	4	2	2	1	1	29
(Drainage Area Controlled in Square Miles)	(497)	(195)	(99)	(876)	(504)	(998)	(17.6)	(94)	(3,280.6)
Under Study	5	1	0	0	0	0	0	0	6
(Drainage Area Controlled)	(453)	0	0	0	0	0	0	0	(453+)
Under Construction	20	10	3	0	0	0	0	0	33
(Drainage Area Controlled)	(145)	(808)	(95)	0	0	0	0	0	(1,048)
<u>Levees and Walls</u>									
Existing	8	13	8	3	2	2	1	1	38
Under Study	1	6	13	4	3	3	1	1	32
Under Construction	0	0	0	0	0	3	0	0	3
<u>Channel Improvement</u>									
Existing	12	11	13	5	4	1	0	1	47
Under Study	1	1	14	2	5	2	0	4	29
Under Construction	0	1	1	0	0	1	1	0	4

FLOOD PLAIN DELINEATION STUDIES

CORPS OF ENGINEERS

Completed Flood Plain Information ReportsNew York

Susquehanna River - Nanticoke, Luzerne County

Susquehanna River - Wilkes-Barre area, Luzerne County

Susquehanna River (25 miles) and Chenango River (9 miles) Binghamton, Broome County

Susquehanna River - Windsor and Colesville Towns, Broome County (20 miles)

Chenango River - Fenton and Chenango Towns, Broome County

Chemung River, Part 1 - Elmira, Chemung County (Preliminary - 14 miles)

Chemung River (22 miles) and Seeley Creek (4 miles), Part 2 - Wellsburg, Chemung County, (Preliminary)

Chemung River - Corning, Steuben County, (Preliminary - 18 miles)

Pennsylvania

Lycoming Creek, Lycoming County (10 miles)

Loyalsock Creek, Lycoming County (11 miles)

West Branch Susquehanna River-Williamsport, Lycoming County (13 miles)

West Branch Susquehanna River (7 miles) and Bald Eagle Creek (8 miles) - Lock Haven area, Clinton County

Susquehanna River - Bloomsburg, Columbia County, (12 miles)

Mill Run - Altoona, Pennsylvania, Blair County (7 miles)

West Branch Susquehanna River - East Lycoming County (13 miles)

Frankstown Branch Juniata River-Williamsport, Blair County (Preliminary - 6 miles)

Susquehanna River - Shickshinny, Luzerne County, (2 miles)

SUSQUEHANNA RIVER BASIN COMMISSION

Completed Flood Insurance Studies

New York

Ashland Town
Big Flats Town
Binghamton City
Conklin Town
Chemung Town
Corning City
Corning Town
Dickinson Town
Elmira City
Elmira Town
Endicott Village
Erwin Town

Johnson City Village
Kirkwood Town
Owego Town
Owego Village
Painted Post
Port Dickinson Village
Riverside Village
South Corning Village
Southport Town
Union Town
Vestal Town
Wellsburg Village

Pennsylvania

Annville Township
Athens Borough
Bellefonte Borough
Buffalo Township
Burnham Borough
Camp Hill Borough
Castanea Township
Cleona Borough
Conyngham Township
Danville Borough
Dauphin Borough
Derry Township
(Dauphin County)
Derry Township
(Mifflin County)
Duboistown Borough
Dunstable Township
East Buffalo Township
East Pennsboro Township
Edwardsville Borough
Exeter Borough
Fairview Township
Flemington Borough
Forty-Fort Borough
Granville Township
Gilberton Borough
Hampden Township

Hanover Township
Harrisburg City
Highspire Borough
Hummelstown Borough
Huntingdon Borough
Jenkins Township
Jersey Shore Borough
Kelly Township
Kingston Borough
Kistler Borough
Larkesville Borough
Lebanon City
Lewisburg Borough
Lewistown Borough
Lock Haven City
Lower Allen Township
Lower Swatara Township
Loyalsock Township
Luzerne Borough
Mahoning Township
Mapleton Borough
Marysville Borough
Middletown Borough
Milesburg Borough
Mill Hall Borough
Monroe Township
Montgomery Borough

Pennsylvania - (Continued)

Montoursville Borough
Mount Union Borough
Muncy Borough
Nanticoke City
New Cumberland Borough
Northumberland Borough
North York Borough
Old Lycoming Township
Pine Creek Township
Pittston City
Plains Township
Plymouth Borough
Plymouth Township
Point Township
Porter Township
Pringle Borough
Renovo Borough
Riverside Borough
Royalton Borough
Sayre Borough
Shamokin Dam Borough
Shickshinny Borough

Smithfield Township
South Hanover Township
South Renovo Borough
South Williamsport Borough
Spring Garden Township
Spring Township
Springettsbury Township
Steelton Borough
Sunbury City
Susquehanna Township
Swoyersville Borough
Upper Augusta Township
West Chillisquaque Township
West Fairview Borough
West Lebanon Township
West Pittston Borough
West Wyoming Borough
Wilkes-Barre City
Williamsport City
Wormleysburg Borough
Wyoming Borough
York City

Maryland

Havre De Grace
Perryville
Port Deposit

FEDERAL AGENCIES

Carlisle Borough (SCS)
Milton Borough (COE)
Selinsgrove Borough (USGS)

SUSQUEHANNA RIVER BASIN COMMISSION

Underway Flood Insurance Studies

Pennsylvania

Archbald Borough
Armstrong Township
Athens Township
Avis Borough
Blakely Borough
Bloomsburg Town
Brady Township
Braintrim Township

Briar Creek Borough
Carbondale City
Catawissa Borough
Catawissa Township
Chapman Township
Clark Summit Borough
Cleveland Township
Clinton Township

Pennsylvania - (Continued)

Colebrook Township
Columbia Borough
Conestoga Township
Conoy Township
Delaware Township
Dickson City Borough
Duncannon Borough
Dunmore Borough
Duryea Borough
East Donegal Township
East Manchester Township
Eaton Township
Exeter Township
 (Lycoming County)
Exeter Township
 (Wyoming County)
Fairfield Township
Fermanagh Township
Franklin Township
Goldsboro Borough
Gregg Township
Halifax Borough
Hallam Borough
Hellam Borough
Hemlock Township
Herndon Borough
Howe Township
Hunlock Township
Jackson Township
 (Northumberland County)
Jermyn Township
Jessup Township
Laceyville Borough
Little Mahanoy Township
Liverpool Borough
Locust Township
Londonderry Township
Lower Augusta
Lower Chanceford
Manor Township
Marietta Borough
Martic Township
Meshoppen Borough
Meshoppen Township
Middle Paxton Township
Mifflin Borough
 (Juniata County)
Mifflin Township
 (Columbia County)
Millersburg Borough

Montour Township
Moosic Borough
Mount Pleasant Township
Mount Wolf Borough
Nescopeck Borough
Nescopeck Township
Newberry Township
Newport Borough
Nippenose Township
Noyes Township
Old Forge Borough
Oliver Township
Olyphant Borough
Orange Township
Orangeville Borough
Penn Township
 (Perry County)
Penn Township
 (Snyder County)
Piatt Township
Port Royal Borough
Ransom Township
Reed Township
Ridgebury Township
Roaring Brook Township
Rye Township
Salem Township
Scott Township
Scranton City
South Centre Township
South Waverly Borough
Susquehanna Township
Taylor Borough
Throop Borough
Tunkhannock Borough
Turbett Township
Turbot Township
Union Township
Upper Paxton Township
Walker Township
Watsonstown Borough
Watts Township
Wayne Township
Wheatfield Township
White Deer Township
Woodward Township
 (Clinton County)
Woodward Township
 (Lycoming County)
Wrightsville Borough

New York

Addison Village	Hornell Town
Alfred Village	Horseheads Town
Almond Town	Horseheads Village
Almond Village	Lindley Town
Arkport Village	North Hornell Village
Campbell Town	Savona Village
Elmira Heights Village	Waverly Village
Hornell City	



